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[54] OPTICAL DEVICE FOR DETECTING THE PRINTING MEDIA IN PRINTERS

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[58] Field of Search 250/214 PR, 232, 250/233, 559.4; 271/3.15, 3.17, 227, 258.01, 262, 263, 258.05, 265.04, 152

[56] References Cited

U.S. PATENT DOCUMENTS

4,791,457 12/1988 Shida .
 5,042,790 8/1991 Miller et al. 271/110
 5,329,119 7/1994 Swartz et al. .
 5,539,510 7/1996 Yamashiro et al. .
 5,634,635 6/1997 Kobayashi et al. 271/3.16
 5,915,690 6/1999 Surya 271/265.01

FOREIGN PATENT DOCUMENTS

2299070A 1/1995 United Kingdom .

OTHER PUBLICATIONS

European Search Report. EP 97 50 0151, Jan. 27, 1998.
 Patent Abstracts of Japan. vol. 008, No. 253, Nov. 20, 1984.
 Abstract, XS MA 9750015110.

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[57] ABSTRACT

An optical device for detecting the printing media in printers includes an element pivoting on two rotation pivots which are incorporated therein a certain distance apart and which are guided in respective independent curved grooves. The pivoting element includes two extensions which point outwards from the central portion of the element, and of which one is intended to receive, at its front and rear edges, the end edges of the laminar printing media during its forward and rearward movements towards and away from the input rollers of the laminar substrate in the printer. The second extension of the pivoting element can move into and out of an opening of the optical detector in a manner corresponding to the rotary movements of the pivoting element brought about by the movements of the printing media. The pivoting element of the detector is located in a position such that the extension on which the printing media is intended to act establishes contact with the face of the printing media opposite to that which receives the printing.

15 Claims, 5 Drawing Sheets

